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IN THE CLAIMS

1.   (Currently amended)   A storage apparatus that operates in response to commands from a computer, the storage apparatus comprising:

a storage region; and

a control unit that operates in response to a first command that ~~correlates~~ snaps a first storage region in the storage region [[to]] and a second storage region in the storage region into a snap state in which said first and second storage regions form a pair having a master-slave control relationship, and while said first and second storage regions are in said snap state, allows ~~in response to a read instruction to read data in the second storage region~~ copying of the data from the first storage region to the second storage region in response to a read instruction to read data in the second storage region, and in response to a second command that dissolves the ~~correlation~~ snap state between the first storage region and the second storage region.

2.   (Currently amended)   A storage apparatus according to claim 1, wherein, when controlling the copying of data, the control unit reads data from the first storage region, outputs

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the data read to the computer, and then writes the data ~~read~~

to the second storage region.

    3. (Original) A storage apparatus according to claim 1,

wherein, when there is data copied from the first storage

region to the second storage region, the control unit

invalidates the data in response to the first command.

    4. (Original) A storage apparatus according to claim 1,

wherein the first command is a command that allows copying of

data from the first storage region to the second storage

region in response to a write instruction to the second

storage region.

    5. (Original) A storage apparatus according to claim 4,

wherein the control unit writes data designated by the write

instruction on the data copied to the second storage region.

    6. (Original) A storage apparatus according to claim 5,

wherein the control unit controls in response to the second

command to copy the data designated by the write instruction

and written in the second storage region to the first storage

region.

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7.   (Currently amended)   A storage apparatus according to claim 4, wherein the control unit controls the storage apparatus, in response to the second command, to copy the data from the first storage region to a region in the second storage region where data is not has not been copied from the first storage region.

8.   (Currently amended)   A storage apparatus according to claim 1, wherein the control unit controls the storage apparatus, in response to the second command, to copy the data from the first storage region to a region in the second storage region where data is not has not been copied from the first storage region.

9.   (Currently amended)   A storage apparatus according to claim 1, wherein the control unit generates, in response to the first command, management information to manage correlation the snap state between the first storage region and the second storage region, and to release the management information in response to the second command.

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10.   (Currently amended) A storage apparatus according
to claim 1, wherein the control unit includes a control module
that is responsive to a third command to control copying data
from the first storage region to a region of the second
storage region where data is not has not been copied from the
first storage region, and to control dissolving the
correlation snap state between the first storage region and
the second storage region.

11.   (Original) A storage apparatus according to claim
10, wherein the control unit is responsive to the second
command and the third command selectively issued from the
computer.

12.   (Currently amended) A storage apparatus that
operates in response to commands from a computer, the storage
apparatus comprising:

    a storage region; and

    a control unit that operates in response to a first
command that causes a first storage region within the storage
region to be correlated to enter a snap state with a second
storage region within the storage region, wherein in said snap
state said first and second storage regions form a pair having

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a master-slave control relationship; that while said first and
second storage regions are in said snap state, allows ~~in~~
~~response to a read instruction to read data in the second~~
~~storage region~~ copying of the data from the first storage
region to the second storage region in response to a read
instruction to read data in the second storage region; [[,]]
allows in response to a write instruction to the second
storage region, writing of data instructed in the write
instruction to the second storage region; [[,]] and controls
copying the data written in the second storage region to the
first storage region.

    13. (Original) A storage apparatus according to claim
12, wherein, when controlling the copying of the data in
response to the read instruction, the control unit reads the
data from the first storage region, outputs the data read to
the computer, and then writes the data read in the second
storage region.

    14. (Original) A storage apparatus according to claim
12, wherein the control unit controls the copying of the data
written in the first storage region in response to a second
command.

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15. (Original) A storage apparatus according to claim 12, wherein the control unit controls in response to the first command copying of data of the first storage region to the second storage region designated by the write instruction before writing the data designated by the write instruction.

16. (Currently amended) A storage apparatus according to claim 12, wherein, when there is data in the second storage region that has been copied from the first storage region to the second storage region, the control unit controls in response to the first command to invalidate the data that has been copied.

17. (Currently amended) A storage apparatus according to claim 12, wherein the control unit is responsive to a third command to control dissolving of the correlation snap state between the first storage region and the second storage region.

18. (Currently amended) A storage apparatus according to claim 17, wherein the control unit generates, in response to the first command, management information to manage

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~~correlation~~ the snap state between the first storage region and the second storage region, and dissolves the management information in response to the third command ~~the management information~~.

    19. (Currently amended) A storage apparatus comprising:

    a storage region; and

    a control unit that controls transfer between a first control state, that ~~correlates~~ snaps a first storage region within the storage region to a second storage region within the storage region into a snap state in which said first and second storage regions form a pair having a master-slave control relationship, and while said first and second storage regions are in said snap state, allows ~~in response to a read instruction to read data in the second storage region~~ copying of the data from the first storage region to the second storage region in response to a read instruction to read data in the second storage region; and a second control state, that dissolves the ~~correlation~~ snap state between the first storage region and the second storage region.

    20. (Currently amended) A storage apparatus according to claim 19, wherein, when controlling the copying of data,

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the control unit reads data from the first storage region,
outputs the data read to a host computer, and then writes the
data ~~read~~ to the second storage region.

21.   (Original) A storage apparatus according to claim
19, wherein the control unit controls, in the first control
state, in response to a write instruction to the second
storage region, to allow copying of data from the first
storage region to the second storage region.

22.   (Currently amended) A storage apparatus according
to claim 19, wherein, when transferring from the first control
state to the second control state, the control unit controls
copying of data from the first storage region to a region in
the second storage region where data ~~is not~~ has not been
copied from the first storage region.

23.   (Currently amended) A storage apparatus according
to claim 19, wherein, when transferring from the first control
state to the second control state, the control unit controls
copying of data from the second storage region to a region in
the first storage region where data ~~is not~~ has not been copied
from the second storage region.

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24.   (Currently amended)   A storage apparatus according to claim 19, wherein, when transferring from the first control state to the second control state, the control unit generates management information to manage ~~correlation~~ the snap state between the first storage region and the second storage region, and when transferring from the second control state to the first control state, the control unit releases the management information.

25.   (Currently amended)   A method for managing a storage apparatus having a storage region, the method comprising the steps of:

in response to a first command from a computer, ~~correlating~~ snapping a first storage region in the storage region [[to]] and a second storage region in the storage region into a snap state in which said first and second storage regions form a pair having a master-slave control relationship, and while said first and second storage regions are in said snap state, copying data from the first storage region to the second storage region in response to a read instruction from the computer to read the data in the second storage region; and

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in response to a second command, dissolving the

~~correlation~~ snap state between the first storage region and

the second storage region.

26. (Original) A method for managing a storage

apparatus according to claim 25, wherein the step of copying

the data comprises the steps of reading data from the first

storage region, outputting the data read to the computer, and

then writing the data read to the second storage region.

27. (Currently amended) A method of managing a storage

apparatus according to claim 25, wherein, when there is data

in the second storage region that has been copied from the

first storage region ~~to the second storage region~~, the data is

invalidated in response to the first command.

28. (Original) A method of managing a storage apparatus

according to claim 27, wherein, in response to a write

instruction to the second storage region, data is copied from

the first storage region to the second storage region.

29. (Original) A method of managing a storage apparatus

according to claim 28, wherein data designated by the write

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instruction is written on the data copied to the second

storage region.

    30. (Original) A method of managing a storage apparatus

according to claim 29, wherein, in response to the second

command, the data designated by the write instruction and

written in the second storage region is copied to the first

storage region.

    31. (Currently amended) A method of managing a storage

apparatus according to claim 29, wherein, in response to the

second command, the data is copied from the first storage

region to a region in the second storage region where data ~~is~~

~~not~~ has not been copied from the first storage region.

    32. (Currently amended) A method of managing a storage

apparatus according to claim 25, wherein, in response to the

second command, the data is copied from the first storage

region to a region in the second storage region where data ~~is~~

~~not~~ has not been copied from the first storage region.

    33. (Currently amended) A method of managing a storage

apparatus according to claim 25, wherein management

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information to manage ~~correlation~~ the snap state between the

first storage region and the second storage region is

generated in response to the first command, and the management

information is released in response to the second command.

34. (Currently amended) A method of managing a storage

apparatus according to claim 25, wherein the control unit

copies data from the first storage region to a region of the

second storage region where data ~~is not~~ has not been copied

from the first storage region, and dissolves the ~~correlation~~

snap state between the first storage region and the second

storage region in response to a third command.

35. (Original) A method of managing a storage apparatus

according to claim 34, further comprising the step of

responding to the second command and the third command

selectively issued from the computer.

36. (Currently amended) A method for managing a storage

apparatus having a storage region, the method comprising the

steps of:

~~correlating~~ snapping a first storage region within the

storage region [[to]] and a second storage region within the

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storage region[[,]] into a snap state in which said first and

second storage regions form a pair having a master-slave

control relationship;

in response to a read instruction from a computer to read

data in the second storage region, and while said first and

second storage regions are in said snap state, copying the

data from the first storage region to the second storage

region;

in response to a write instruction from the computer to

the second storage region, writing data instructed in the

write instruction to the second storage region; and

copying the data written in the second storage region to

the first storage region.

37.   (Original) A method for managing a storage

apparatus according to claim 36, wherein the step of copying

the data comprises the steps of: reading the data from the

first storage region, outputting the data read to the

computer, and then writing the data read in the second storage

region.

38.   (Original) A method for managing a storage

apparatus according to claim 36, wherein the step of copying

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the data written to the first storage region is executed in

response to a command from the computer.

39. (Currently amended) A method for managing a storage

apparatus according to claim 36, wherein, before writing the

data designated by the write instruction, data of the first

storage region is copied to the second storage region

designated by the write instruction.

40. (Currently amended) A method for managing a storage

apparatus according to claim 36, further comprising the step

of controlling, in response to a command from the computer,

when there is data <u>in the second storage region that has been</u>

copied from the first storage region ~~to the second storage~~

~~region~~, to invalidate the data.

41. (Currently amended) A method for managing a storage

apparatus according to claim 36, wherein the ~~correlation~~ <u>snap</u>

<u>state</u> between the first storage region and the second storage

region is dissolved in response to a command from the

computer.

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42.   (Currently amended)   A method for managing a storage apparatus according to claim 41, wherein the step of ~~correlating~~ snapping the first storage region to the second storage region includes the step of generating management information to manage ~~correlation~~ the snap state between the first storage region and the second storage region, wherein the management information is released in response to the command.

43.   (Currently amended)   A method for managing a storage apparatus having a storage region, the method comprising the steps of:

controlling transfer between a first control state in which a first storage region within the storage region ~~is correlated to~~ and a second storage region within the storage region are snapped into a snap state in which said first and second storage regions form a pair having a master-slave control relationship, and a second control state in which the ~~correlation~~ snap state between the first storage region and the second storage region is dissolved; and

in the first control state, in response to a read instruction to read data in the second storage region, copying

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the data from the first storage region to the second storage

region.

44. (Original) A method for managing a storage

apparatus according to claim 43, wherein the step of copying

the data includes the steps of reading the data from the first

storage region, outputting the data read to a host computer,

and then writing the data read to the second storage region.

45. (Original) A method for managing a storage

apparatus according to claim 43, wherein, in the first control

state, in response to a write instruction to the second

storage region, data is copied from the first storage region

to the second storage region.

46. (Currently amended) A method for managing a storage

apparatus according to claim 43, wherein, when transferring

from the first control state to the second control state, data

is copied from the first storage region to a region in the

second storage region where data is not has not been copied

from the first storage region.

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47.   (Currently amended)   A method for managing a storage
apparatus according to claim 43, wherein, when transferring
from the first control state to the second control state, data
is copied from the second storage region to a region in the
first storage region where data ~~is not~~ <u>has not been</u> copied
from the second storage region.

48.   (Currently amended)   A method for managing a storage
apparatus according to claim 43, wherein, when transferring
from the first control state to the second control state,
management information to manage ~~correlation~~ <u>the snap state</u>
between the first storage region and the second storage region
is generated, and when transferring from the second control
state to the first control state, the management information
is released.

49.   (Currently amended)   A storage apparatus comprising:
a storage region, wherein a first storage region within
the storage region and a second storage region within the
storage region are ~~correlated and controlled in a first state~~
<u>snapped into a first snap state in which said first and second</u>
<u>storage regions form a pair having a master-slave control</u>
<u>relationship</u>, and the first storage region and the second

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storage region are controlled with the ~~correlation~~ <u>snap state</u>

therebetween being dissolved in a second state; and

a control unit that selectively executes a first control

mode which dissolves the ~~correlation~~ <u>snap state</u> in order to

transfer from the ~~first~~ <u>snap</u> state to the second state and a

second control mode which dissolves the ~~correlation~~ <u>snap state</u>

after copying data in the first storage region to the second

storage region.

50.   (Currently amended) A storage apparatus comprising:

a storage region, wherein a first storage region within

the storage region and a second storage region within the

storage region are ~~correlated and controlled in a first state~~

<u>snapped into a first snap state in which said first and second</u>

<u>storage regions form a pair having a master-slave control</u>

<u>relationship,</u> and the first storage region and the second

storage region are controlled with the ~~correlation~~ <u>snap state</u>

therebetween being dissolved in a second state; and

a control unit that selectively executes a first control

mode which dissolves the ~~correlation~~ <u>snap state</u> in order to

transfer from the ~~first~~ <u>snap</u> state to the second state and a

second control mode which dissolves the ~~correlation~~ <u>snap state</u>

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after copying data in the second storage region to the first

storage region.

51.   (Currently amended) A storage apparatus comprising:

a storage region;

a memory storing management information; and

a control unit that commonly uses the management

information stored in the memory as control information for

managing ~~correlation~~ a snap state between a first storage

region within the storage region and a second storage region

within the storage region in which said first and second

storage regions form a pair having a master-slave control

relationship, and as control information for managing

~~correlation~~ the snap state of a data status resulting from

accesses to data in the first storage region with a data

status resulting from accesses to data in the second storage

region, and manages the first storage region and the second

storage region that store the data.

52.   (Currently amended) A method for controlling a

storage apparatus comprising the steps of:

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    controlling primary and secondary volumes as a pair <u>in a</u> <u>snap state in which said primary and secondary volumes have a</u> <u>master-slave control relationship</u>; and

    using a logical snapshot management table that indicates which one of the primary and secondary volumes data to be accessed is retained to thereby access to a logical frozen image.

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